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ABSTRACT

This study involved the use of "economic reasoning," which refers to the application of the concept of cost-benefit analysis to personal decision making. The study examined the degree of economic reasoning employed by high school seniors who had received instruction in cost benefit analysis. The main purpose of the study was to compare the economic reasoning used by a group of students that was faced with a realistic, non-hypothetical decision about how to allocate their time with the economic reasoning used by a group of students that was faced with a hypothetical decision about how they would allocate their time. Specifically, the non-hypothetical dilemma faced by the first group of students was deciding what to do during a "free" half class period, while the hypothetical dilemma faced by the second group of students was reporting what they would do if given a "free" half class period. The results of the study suggested that students facing hypothetical time allocation dilemmas employ as much economic reasoning as students facing non-hypothetical dilemmas. A 6-item list of references is included. (DB)

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Economic Reasoning in Hypothetical vs. Nonhypothetical Time-Allocation Decisions

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Abstract

The experiment employed a posttest-only control group design. It involved three randomly-formed high school economics classes. Two classes made an enactive response and a written response to a nonhypothetical time-allocation dilemma, but the order of responses was reversed for the two classes. A third class responded in writing to an identical but hypothetical time-allocation dilemma.

Decisions were evaluated in terms of a three-level hierarchy of economic reasoning. Using a set of planned comparisons, no significant difference in level of economic reasoning was found between the mean scores of the two nonhypothetical decision groups or between the average of the mean scores of the two nonhypothetical decision groups and the mean score of the hypothetical decision group.

ECONOMIC REASONING IN HYPOTHETICAL VS. NONHYPOTHETICAL TIME-ALLOCATION DECISIONS

Statement of the Problem

"Economic reasoning," as it is used in this study, refers to the application of the concept of cost-benefit analysis to personal decision making. According to Kourilsky and Murray (1981), it can be conceptualized in terms of a three-level hierarchy of decision making that integrates scarcity, alternatives, and opportunity cost. Individuals at level 1 of the hierarchy can recognize the existence of scarce resources, such as money and time. Individuals at level 2 are able to identify specific alternative uses for the scarce resources, and individuals at level 3 are able to identify realistic alternative uses and rank them in terms of anticipated benefits. In short, the hierarchy specifies three levels of explicitness in the application of cost-benefit analysis to personal decision making.

Relatively little research on economic reasoning exists, but several studies have been done in recent years. The major findings of these studies can be summarized as follows:

(1) Kourilsky and Kehret-Ward (1983): Participation in an introductory economics course that employed a didactic or lecture approach was a strong predictor of college students' economic reasoning in monetary decisions, but not

in time-allocation decisions. A high positive correlation was found between economic cognition and economic reasoning with respect to monetary decisions, but not time-allocation decisions.

(2) Kourilsky (1985): Participation in an experience-based economics program was a strong predictor of high school students' economic cognition and economic reasoning in both monetary and time-allocation decisions.

(3) Kourilsky and Graff (1986): For first- through fourth-graders, participation in an experience-based economics program was a significant factor affecting their economic reasoning in both monetary and time-allocation decisions, but it was less important as a determinant of economic reasoning in time-allocation decisions than it was in monetary decisions. Based on the findings of this study, it would appear that elementary school students have a greater understanding of cost-benefit analysis and a greater proclivity to use cost-benefit analysis in personal monetary decisions as they get older. The findings were inconclusive in determining whether age is a significant factor with respect to elementary school students' economic reasoning in time-allocation decisions.

(4) Kourilsky and O'Neill (1985): College sophomores who participated in a semester-long economics course featuring experience-based learning activities used a significantly higher level of economic reasoning than a control group of subjects who participated in a humanities

course. For subjects participating in the economics course, economic cognition and economic reasoning with respect to time-allocation decisions were shown to be highly and positively correlated. Within both the experimental and control groups, the economic reasoning level of college subjects responding to a low-importance time-allocation dilemma was significantly greater than the economic reasoning level of subjects responding to either a high-importance or medium-importance time-allocation dilemma, giving rise to the speculation that one's level of economic reasoning in time-allocation decisions may increase with increasing "perceived familiarity" rather than with increasing "perceived importance."

(5) Laney (1988): High school seniors who had received instruction in cost-benefit analysis used a significantly higher level of economic reasoning when resolving time-allocation dilemmas they perceived as being high in familiarity as opposed to time-allocation dilemmas they perceived as being low in familiarity, regardless of the level of perceived importance (high or low) of these same dilemmas.

Some of the studies described above (i.e. Kourilsky and O'Neill, 1985; Laney, 1988) used hypothetical dilemmas to investigate economic reasoning, while others (i.e. Kourilsky and Kehret-Ward, 1983; Kourilsky, 1985) used nonhypothetical dilemmas. Kourilsky and Graff (1986) may have confounded their results by not controlling the

hypothetical/nonhypothetical factor, for they compared elementary students' economic reasoning in response to a nonhypothetical monetary dilemma to elementary students' economic reasoning in response to a hypothetical time-allocation dilemma. None of these studies address the question of whether the "realness" of a decision-making situation influences one's economic reasoning.

In the experiment to be described in this paper, the hypothetical/nonhypothetical factor was used as the independent or manipulated variable, while all other factors were kept constant. Specifically, the purpose of the study was to determine whether high school economics students use a different level of economic reasoning when resolving a nonhypothetical time-allocation dilemma as opposed to an identical but hypothetical time-allocation dilemma.

Research Questions

The following questions were formulated at the outset of the study:

(1) Do high school seniors with training in cost-benefit analysis use a different level of economic reasoning when resolving a nonhypothetical time-allocation dilemma as opposed to an identical but hypothetical time-allocation dilemma?

(2) Do high school seniors with training in cost-benefit analysis exhibit a different level of economic reasoning when responding in writing to a nonhypothetical

dilemma before implementing their decisions as opposed to the same nonhypothetical time-allocation dilemma after implementing their decisions?[1]

Methodology and Procedure

The study was limited to a population of high school seniors at one predominantly white, middle-class school in southern California. Seniors at this school are required to take an economics course and are randomly assigned to either the first or second semester. Within each semester, seniors assigned to take the economics course that semester are randomly assigned to three classrooms. Each classroom is taught by the same economics instructor. The sixty-five economics students from the second semester participated as subjects in the study. This sample included thirty-two boys and thirty-three girls. At the time of the study, the subjects were eight weeks into the semester-long economics course and had completed the portion of the course in which they received instruction in cost-benefit analysis.

The experiment employed a posttest-only control group design. The three randomly-formed classrooms were randomly assigned to three treatment conditions as follows:

- Classroom 1 served as the "preimplementation, nonhypothetical time-allocation decision group."
- Classroom 2 served as the "postimplementation, nonhypothetical time-allocation decision group."

- Classroom 3 served as the "hypothetical time-allocation decision group."

Students in classrooms 1 and 2 were asked to make a written response and an enactive response to a nonhypothetical time-allocation dilemma (i.e. deciding what to do during a "free" half class period.) The written response involved writing as essay (or keeping a log of one's thinking processes) describing the decision one had made and the way one had gone about making the decision, while the enactive response involved implementing the decision. Each student in classroom 1 made his/her written response first and his/her enactive response second, while each student in classroom 2 made his/her enactive response first and his/her written response second.

Students in classroom 3 were asked to make a written response to an identical but hypothetical time-allocation dilemma. They did not implement their decisions.

The time-allocation dilemma and essay were described to students as follows:

- Version 1 (for classroom 1, the "preimplementation, nonhypothetical time-allocation decision group"): "You, as an individual, will be allowed to do anything you want during the second half of today's class meeting. What are you going to do as an independent activity? Write a brief essay (or keep a log of your thinking processes) describing the way you went about making your decision. What things did you think about to help you decide?"

- Version 2 (for classroom 2, the "postimplementation, nonhypothetical time-allocation decision group"): "You, as an individual, were allowed to do anything you wanted during the first half of today's class meeting. What did you do as an independent activity? Write a brief essay (or keep a log of your thinking processes) describing the way you went about making your decision. What things did you think about to help you decide?"

- Version 3 (for classroom 3, the "hypothetical time-allocation decision group"): Pretend that you, as an individual, are going to be allowed to do anything you want during one-half of the next meeting of this class. What would you do during that half-period? (Note: It must be an independent activity, not a group activity.) Write a brief essay (or keep a log of your thinking processes) describing the way you went about making your decision. What things did you think about to help you decide?"

These posttest essay assignments were presented to students as an evaluation of their decision-making ability. All directions to the students were standardized. In order not to influence subjects to adopt a style of thinking that was atypical for them, the subjects were not told that their economic reasoning (i.e. use of cost-benefit analysis) would be analyzed.

Writing time was held constant across all groups, with a period of twenty minutes being allowed for the written response.

Economic reasoning was measured through students' posttest essays (or logs) on their time-allocation decisions, which were evaluated by two expert judges in terms of a three-level hierarchy of economic reasoning. A response to a dilemma was worth between 0 and 3 points, and judges scored each response at the highest level of economic reasoning exhibited. The evaluation criteria in terms of point allocation are given below along with sample responses to the time-allocation dilemma--deciding what to do during a "free" half class period.

- 0 = No recognition or use of economic reasoning--"I will read a magazine. I like to read."
- 1 = Recognition of the existence of scarce resources and identification of scarcity as a relevant decision-making issue--"I will read the next chapter in my textbook. It will take me about half of a class period, and I only have half of a class period."
- 2 = Ability to identify specific alternative uses for scarce resources--"I could study for the test I have next period, or do my homework, or read. There are a lot of activities from which to choose."
- 3 = Ability to identify those alternative uses that are realistically within one's consideration set and prioritize them in terms of anticipated benefits--"I could do my homework assignment, which I have to finish before class tomorrow; I also need to read the next chapter in the textbook; but, I think I will study for the test I have

next period because I need to do that the most. I didn't study enough last night, and this is my last chance to study before taking the test."

This economic reasoning scale, consisting of three levels of explicitness in the application of cost-benefit analysis to personal decision making, was developed by Kourilsky and Murray (1981), and has been employed in connection with all of the economic reasoning studies described above (i.e. Kourilsky and Kehret-Ward, 1983; Kourilsky, 1985; Kourilsky and Graff, 1986; Kourilsky and O'Neill, 1985; Laney, 1988).

Results

Table 1 summarizes the results of the experiment. It contains the economic reasoning score means and standard deviations for the three treatment groups. Of the three treatment groups, the "preimplementation, nonhypothetical time-allocation decision group" demonstrated the highest average level of economic reasoning, and the "postimplementation, nonhypothetical time-allocation decision group" demonstrated the lowest average level of economic reasoning. The economic reasoning mean of the "hypothetical time-allocation decision group" fell between the means of the two "nonhypothetical time-allocation decision groups." Scores ranged from 0 to 3 in all three groups.

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Two planned comparisons revealed nonsignificant differences between group means. With respect to comparison 1, the average of the mean scores of the "preimplementation, nonhypothetical time-allocation decision group" and the "postimplementation, nonhypothetical time-allocation decision group" was not significantly different from the mean score of the "hypothetical time-allocation decision group," with t observed = .34 and t critical (two-tailed test, $\alpha = .05$, $df_W = 62$) $\simeq 2.00$. With respect to comparison 2, the mean score of the "preimplementation, nonhypothetical time-allocation decision group" was not significantly different from the mean score of the "postimplementation, nonhypothetical time-allocation decision group," with t observed = .62 and t critical (two-tailed test, $\alpha = .05$, $df_W = 62$) $\simeq 2.00$.

As a rough check for homogeneity of variance, the F max statistic was calculated, with F max observed = 1.29 and the critical value of $F\ max_{.95}$ ($k = 3$, $df = 24 - 1 = 23$) $\simeq 2.95$. Thus, the data did not contradict the assumption of homogeneity of variance.

Using the Pearson product-moment correlation, the interscore reliability between the two judges on the measure of economic reasoning was found to be high ($r = .94$).

While recognizing that failures to reject null hypotheses are not proofs of the truth of those hypotheses, the experimenter concludes the following:

(1) High school seniors with training in cost-benefit analysis do not seem to use a different level of economic reasoning when resolving a nonhypothetical time-allocation dilemma as opposed to an identical but hypothetical time-allocation dilemma.

(2) High school seniors with training in cost-benefit analysis do not seem to exhibit a different level of economic reasoning when responding in writing to a nonhypothetical dilemma before implementing their decisions as opposed to the same nonhypothetical dilemma after implementing their decisions.

Discussion

The results of the experiment suggest that the findings of previous studies using hypothetical dilemmas to investigate economic reasoning (i.e. Kourilsky and O'Neill, 1985; Kourilsky and Graff, 1986; Laney, 1988) shed as much light on economic reasoning in nonhypothetical decision-making situations as they do on economic reasoning in hypothetical decision-making situations. One could argue that the use of hypothetical dilemmas rather than nonhypothetical dilemmas to investigate economic reasoning in real-life time-allocation decisions saves time and resources without significantly altering a study's results. Students' essays (or logs) of their hypothetical time-allocation decisions appear to be fairly realistic indicators of what these students would actually think and

do in an identical but nonhypothetical decision-making situation.[2]

One major implication for instructional practice can also be drawn from the results outlined above. The use of hypothetical dilemmas in introductory economics courses would appear to be a useful and efficient means of increasing students' familiarity with a variety of decision-making situations. According to Laney (1988), high school students who have received instruction in cost-benefit analysis have a natural propensity to invoke a higher level of economic reasoning in dilemmas of high perceived familiarity--at least with respect to time-allocation dilemmas.

Notes

[1]By including two "nonhypothetical time-allocation decision groups" in the design of the experiment, the experimenter controlled for the possible influence of affect on subjects' postimplementation, written descriptions of their nonhypothetical time-allocation decisions. A subject's satisfaction or dissatisfaction with a nonhypothetical decision that he/she has implemented could conceivably influence the content of the subject's written description of his/her decision.

[2]Students in the two "nonhypothetical time-allocation decision groups" were monitored as they implemented their respective decisions. Without exception, the chosen

activities described in the students' essays matched the activities in which the students engaged.

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TABLE 1

ECONOMIC REASONING SCORE MEANS AND STANDARD DEVIATIONS

Treatment Group	n	$\bar{X}$	s
Preimplementation, Nonhypothetical Time-Allocation Decision Group	20	1.38	1.33
Postimplementation, Nonhypothetical Time-Allocation Decision Group	21	1.14	1.24
Hypothetical Time-Allocation Decision Group	24	1.15	1.17